



California Regional Water Quality Control Board

Los Angeles Region

SEMS-RM DOCID # 1167281



Linda S. Adams
Cal/EPA Secretary

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Arnold Schwarzenegger
Governor

September 17, 2008

Mr. Darrell Fah
Atlantic Richfield Company
6 Centerpointe Drive
La Palma, CA 90623

**UNDERGROUND TANKS PROGRAM – DIRECTIVE TO TAKE CORRECTIVE ACTION IN
RESPONSE TO UNAUTHORIZED UNDERGROUND STORAGE TANK RELEASE PURSUANT
TO HEALTH AND SAFETY CODE SECTION 25296.10 AND TITLE 23, CALIFORNIA CODE OF
REGULATIONS, SECTIONS 2720-2727**

ARCO SERVICE STATION # 5110

5731 FIRESTONE BL., SOUTH GATE (File No. I-12074) (B2)

Dear Mr. Fah:

Pursuant to Health and Safety Code section 25296.10, you are required to take corrective action (i.e. Preliminary Site Assessment, Soil and Water Investigation, Corrective Action Plan Implementation, and Verification Monitoring) to ensure protection of human health, safety, and the environment. Corrective action requirements are set forth in California Code of Regulations (CCR), title 23, sections 2720 through 2727.

Site Assessment and/or Corrective Action Update

Since the removal of four steel USTs in 1989, ten soil borings (A1 through A3 and D1 through D7), ten groundwater monitoring wells (MW-A1 through MW-A8, MW-19, and MW-20), four dual/triple nested wells (VEW-1 through VEW-4), and five triple nested AS/SVE wells have been installed to assess/remediate soil and groundwater beneath the site. Historically, TPHg, benzene, MTBE, and TBA were detected at concentrations as high as 16,000, 16, 11, and 16 mg/kg, respectively, in soil; and as high as 52,000, 13,000, 4,800, and 11,000 µg/L, respectively, in groundwater.

Groundwater monitoring indicated that petroleum hydrocarbons appeared to be migrating off-site, downgradient, to the south of the site. Historically, TPHg, benzene, MTBE, and TBA were detected at concentrations as high as 15,000, 3,700, 3,100, and 5,300 µg/L, respectively, in well MW-A2; as high as 2,400, 180, 370, and 790 µg/L, respectively, in well MW-A5; and as high as 1,100, 500, 130, and 86 µg/L, respectively, in well MW-A8. Wells MW-A2, MW-A5, and MW-A8 are off-site wells, located downgradient of the site. Wells MW-A2 and MW-A5 are located in the eastbound of Firestone Boulevard, near the gutter (See Figure 2 or 3 of the work plan for the well locations). The second quarter 2008 groundwater sampling detected TPHg, benzene, MTBE, and TBA at the maximum concentrations of 270, 130, 130 and 140 µg/L, respectively, in well MW-A2 or MW-A5. Concentrations of these constituents in well MW-A2 sharply decreased in comparison with the previous sampling results.

The site was remediated with an air sparging and soil vapor extraction (AS/SVE) system and has removed 50,303 pounds of hydrocarbons since the system was operated in April 2004. However,

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groundwater monitoring indicated that groundwater beneath the site was still significantly impacted with petroleum hydrocarbons. TPHg, benzene, MTBE, and TBA were detected as high as 4,000 (MW-19), 4,100 (MW-A4), 150 (MW-A5), and 1,800 µg/L (MW-20), respectively, during the second quarter 2008 sampling.

Proposed Supplemental Remedial Action Plan (CCR, Section 2726)

To expeditiously abate the impacted groundwater, Stantec Consulting Corporation (Stantec) submitted the "Interim Remedial Action Workplan for Oxygen Diffuser System and ORC Sock Installation", dated August 4, 2008. In the work plan, Stantec proposed on your behalf, to supplement the AS/SVE system with the followings:

- Slow oxygen release compounds (ORC) will be released into off-site wells MW-A2 and MW-A5 using a 2 inch-diameter ORC sock in each well.
- Compressed oxygen will be introduced in high concentrations into the saturated zones for enhanced biodegradation. Five oxygen injection wells (DW-1 through DW-5) will be installed to 70 fbg, adjacent to wells MW-A3, MW-A4, MW-20, MW-A7, and MW-19, to introduce high concentrations of dissolved oxygen (up to 200 ppm) using the iSOC brand diffusers. The wells will be screened from 45 to 70 fbg.
- During the diffuser well installation, soil samples will be collected at 5-foot intervals for logging purposes only and will not be analyzed due to the close proximity of existing groundwater and air sparge well location.
- Quarterly groundwater monitoring and sampling program will continue to be conducted for wells MW-A3, MW-A4, MW-A7, MW-19, and MW-20.
- To aid in the evaluation of biological conditions in groundwater, groundwater samples from selected wells will be analyzed for heterotrophic bacteria, biological oxygen demand, total dissolved solids, total organic carbon, sulfate, nitrate, methane, pH, and ferrous iron (Fe2+) prior to startup the iSOC system and yearly thereafter.
- Natural attenuation parameters (sulfate, nitrate, methane, and ferrous iron) will also be analyzed in selected wells on the quarterly basis. pH, DO, and ORP will be measured in the field.

We concur with your proposal provided the following conditions are met:

1. **The Los Angeles Regional Board letter dated May 27, 2008, prohibits the use of existing groundwater monitoring wells for injecting ORC/oxygen. Therefore, we do not concur with your proposal to inject ORC directly into groundwater monitoring wells MW-A2 and MW-A5 by sock holders.**

You are required to submit a final remedial action plan in the quarterly Site Conceptual Model Update (SCMU) due by January 15, 2009, to abate the off-site plumes.

2. You are required to submit a remedial action progress in quarterly SCMU starting **January 15, 2009**. The report must include, at a minimum, the following items:
 - Scaled map showing the location of all wells;
 - Cross section profiles showing the remedial well, contaminant plume concentration, and lithologic information;
 - Groundwater elevation measurements;
 - Application rate(s) of oxygen and its quantity used;
 - Calculation of petroleum hydrocarbon mass remediated;
 - Supporting calculations, data interpretation, and conclusions;
 - Copies of all necessary permits from appropriate agencies.
3. Quarterly monitoring and sampling program must continue to be conducted for all existing wells including wells MW-A1, MW-A2, MW-A5, and MW-A8S/D. Analytical results for proposed natural attenuation parameters together with your evaluation must also be included in the appropriate SCMU report.

General Requirements

1. The construction and development of groundwater monitoring, sparge, and vapor extraction wells must comply with requirements prescribed in the California Well Standards (Bulletin 74-90), published by the California Department of Water Resources (can be seen at www.dpla2.water.ca.gov and go to "groundwater").
2. If free product is encountered, product recovery must begin immediately and occur as frequently as possible. Free product must be removed in accordance with the California Code of Regulations (CCRs), Title 23, Chapter 16, Section 2655. Free product removal results, including volume of the product recovered, the legal disposal point, and the hauler's reports or hazardous waste manifest, must be included in your quarterly monitoring report.
3. Soil samples shall be collected at a minimum of five-foot intervals, at changes in soil lithology, and at areas of obvious contamination. Continuous coring is required where low-permeability horizons or frequent lithologic changes are encountered and in water-saturated zones. At a minimum, one continuous core must be extended to the water table at a location other than the source area. Soil samples must be logged, and prepared and preserved per EPA Method 5035.
4. **All** groundwater-monitoring wells must be surveyed to a benchmark of known elevation above mean sea level by a licensed land surveyor or registered civil engineer. Prior to collecting groundwater samples, free product thickness (if present) must be determined and the depth to water must be measured in all wells to be sampled. The wells are to be properly purged until the temperature, conductivity, and pH stabilize, and the water is free of suspended and settleable matter, before samples are collected for analysis. Any wells containing free product must be purged to remove any standing product, allowed to equilibrate to prepurged levels and free product thickness measured and removed.

5. Soil and groundwater samples must be analyzed by Cal-LUFT GC/FID or Cal-LUFT GC/MS Method for total petroleum hydrocarbons as gasoline (TPH_G), total petroleum hydrocarbons as diesel (TPH_D); and by EPA Method 8260B for BTEX, and fuel oxygenate compounds including methyl tertiary butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), and tertiary butyl alcohol (TBA). Ethanol is also required and shall be analyzed by either method above. The analytical detection limits must conform to the Regional Board General Laboratory Testing Requirements (9/06) (http://www.waterboards.ca.gov/losangeles/publications_forms/forms/ust/lab_forms/labreq9-06.pdf). All respective analytical methods must be certified by the California Environmental Laboratory Accreditation Program (ELAP). All analytical data must be reported by a California-certified laboratory.
6. Pursuant to State Water Resources Control Board Resolution No. 92-49, under Water Code Section 13304, all fieldwork related to subsurface investigation including well installation must be conducted by, or under the direct responsible supervision of, a licensed California Professional Geologist (PG) or Civil Engineer (PE). All technical documents submitted to this Regional Board must be reviewed and signed and/or stamped by a licensed California PG or PE, preferably with at least five years subsurface hydrogeologic experience. A California-licensed land surveyor must survey all monitoring wells. The survey report, signed by the licensee, shall be included in the assessment report.
7. The attached site-specific Health and Safety Plan must always available on-site during the fieldwork.
8. All necessary permits must be obtained from appropriate agencies prior to start the fieldwork.
9. All reports submitted to the Regional Board must conform to the "Guidelines for Report Submittals" published by the Los Angeles County Department of Public Works.
10. Notify the Regional Board at least ten days prior to commencing the field work so that our staff may be present.

Failure to submit the required technical reports, by the due dates specified, may result in an appropriate enforcement action by the Regional Board.

Please note that effective on August 15, 2007, Los Angeles Regional Water Quality Control Board Underground Storage Tank Program no longer requires hard copy reports. Please refer the attached guidance for submittal of the electronic reports. The guidance is also available at http://www.waterboards.ca.gov/losangeles/water_issues/programs/ust/guidelines/e-qmr_guideline.pdf

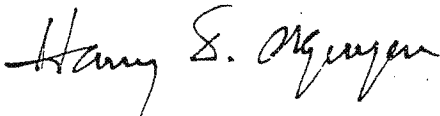
Mr. Darrell Fah
Site: ARCO Station # 5110

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September 17, 2008

If you have any questions concerning this matter, please contact the undersigned at (213) 576-6658 or hnguyen@waterboards.ca.gov.

Sincerely,



Harry D. Nguyen, PE
Water Resource
Control Engineer

cc: Ms. Yvonne Shanks, SWRCB, Underground Tank Cleanup Fund
Mr. Tim Smith, LACDPW, Environmental Programs Division, Underground Tanks
Ms. Nancy Matsumoto, Water Replenishment District of Southern California
Mr. Andrew Modugno, Stantec Consulting Corporation

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